

Swift Observations of GRB 130513A

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1. Introduction

GRB 130513A was detected by IBAS in the IBIS/ISGRI data at 07:38:00 UT of May 13 (Mereghetti *et al.*, GCN Circ. [14630](#)). The burst had a peak flux of $0.7 \text{ counts cm}^{-2}\text{s}^{-1}$ (20-200 keV, 1-s integration time) and a fluence in the same energy range of about $1 \times 10^{-6} \text{ erg cm}^{-2}$. Swift observed the burst as a Target of Opportunity starting about 7 hours after the trigger using target ID 00020274.

Table 1 contains the best reported positions from Swift.

Table 2 is a summary of GCN Circulars about this GRB from observatories other than Swift.

Standard analysis products for this burst are available at http://gcn.gsfc.nasa.gov/swift_gnd_ana.html.

2. BAT Observations and Analysis

The burst was not detected with BAT.

3. XRT Observations and Analysis

We have analysed 3.9 ks of XRT data for the INTEGRAL-detected burst: GRB 130513A, from 25.4 ks to 37.2 ks after the INTEGRAL trigger. The data are entirely in Photon Counting (PC) mode. An X-ray source is detected within the INTEGRAL error circle. The source is fading, and the light curve (**Figure 1**) can be modelled with a power-law of index $3.3 (+1.1, -0.45)$.

Since only 24 photons were detected from this source, the spectrum is poorly constrained. The photon index is $2.9 (+2.1, -1.1)$. The absorption is consistent with the Galactic value of $3.4 \times 10^{20} \text{ cm}^{-2}$ (Kalberla *et al.* 2005), but within the errors on the spectral fit, the absorption could be as high as $5 \times 10^{21} \text{ cm}^{-2}$.

The results of the XRT team automatic analysis are available at http://www.swift.ac.uk/xrt_products/00020274.

4. UVOT Observations and Analysis

The Swift/UVOT began settled observations of the field of GRB 130513A 25261 s after the INTEGRAL trigger (Mereghetti *et al.*, GCN Circ. [14630](#)) (Marshall GCN Circ. [14641](#)). No optical afterglow consistent with the XRT position (Evans and Marshall GCN Circ. [14635](#)) is detected in the initial UVOT exposures. **Table 3** gives preliminary magnitudes using the UVOT photometric system (Breeveld *et al.* 2011, AIP Conf. Proc., 1358, 373). No correction has been made for the expected extinction in the Milky Way corresponding to a reddening of E_{B-V} of 0.03 mag. in the direction of the GRB (Schlegel *et al.* 1998).

Swift/XRT data of GRB 130513A

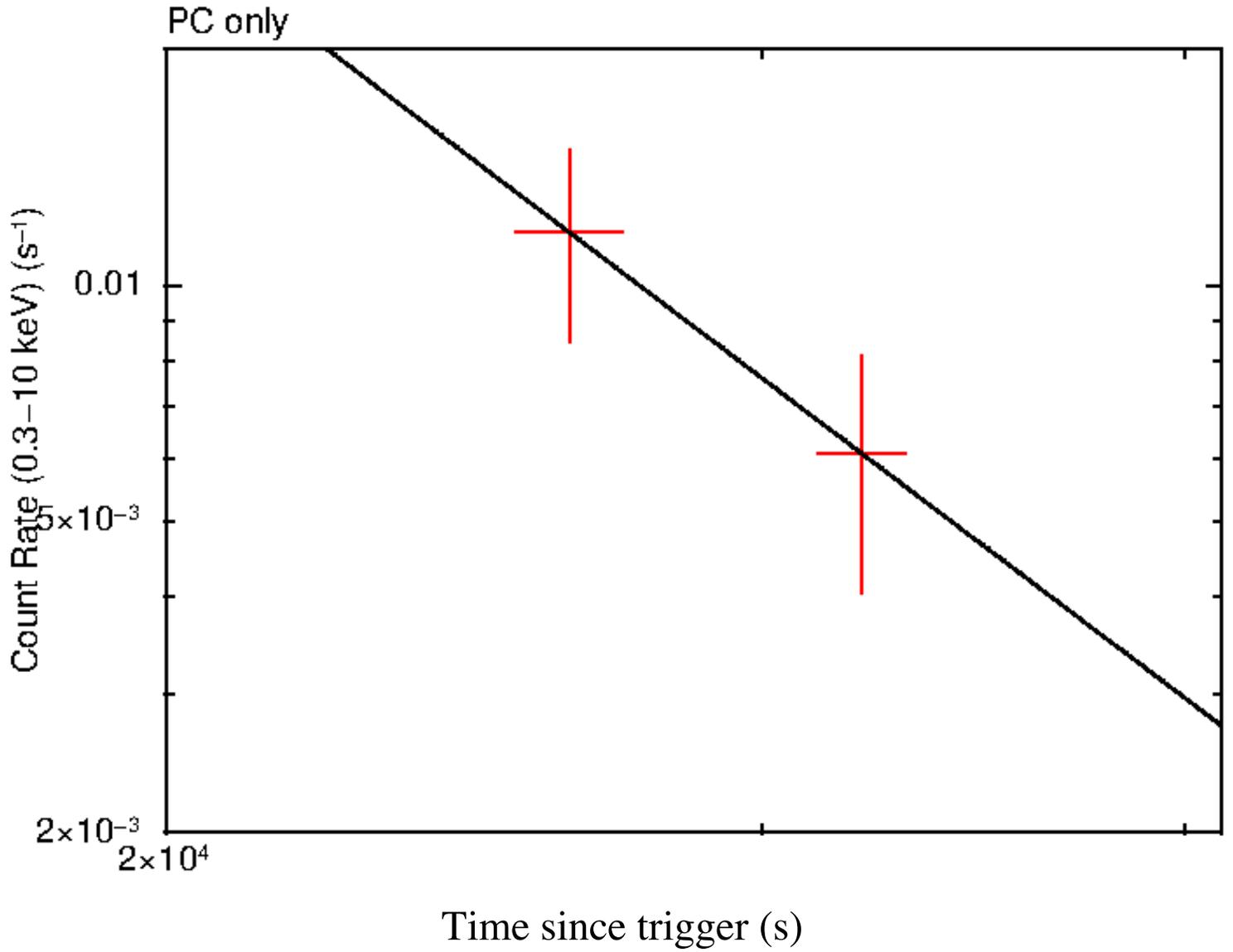


Figure 1. The XRT light curve.

RA	Dec	Error	Note	Reference
09 ^h 39 ^m 02.80 ^s	-05°14' 30.1"	2.7"	XRT	Evans and Marshall GCN Circ. 14635

Table 1. Positions from the Swift instruments.

Band	Authors	GCN Circ.	Subject	Observatory	Notes
Optical	Schmidl <i>et al.</i>	14639	GROND observations	GROND	upper limits
Optical	Butler <i>et al.</i>	14642	RATIR Optical and NIR Observations	RATIR	upper limits
Optical	Quadri and Strabla	14647	Bassano Bresciano optical upper limit	Bassano Bresciano Obs.	upper limits
Gamma-ray	Mereghetti <i>et al.</i>	14630	a long GRB detected by INTEGRAL	INTEGRAL	detection

Table 2. Summary of GCN Circulars from other observatories sorted by band and then circular number.

Filter	T _{start} (s)	T _{stop} (s)	Exp(s)	Mag
white	25885	32269	1218	>21.9
v	26510	32924	1267	>20.6
u	25261	37138	1399	>21.6

Table 3. UVOT observations reported by Marshall (GCN Circ. [14641](#)). The start and stop times of the exposures are given in seconds since the BAT trigger. The preliminary 3- σ upper limits are given. No correction has been made for extinction in the Milky Way.